

BIOGRAPHICAL SKETCH

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|---|----------------------------------|---|----------------|
| NAME Ronald J. Pettis, Ph.D. | | POSITION TITLE Sr. Scientist; Manager Therapeutic Drug Delivery BD Technologies, Research Triangle Park, NC | |
| eRA COMMONS USER NAME | | | |
| EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i> | | | |
| INSTITUTION AND LOCATION | DEGREE <i>(if applicable)</i> | YEAR(s) | FIELD OF STUDY |
| Georgia Institute of Technology | B.S. <i>cum laude</i> | 1986 | Chemistry |
| University of North Carolina at Chapel Hill | M.S. | 1988 | Chemistry |
| University of North Carolina at Chapel Hill | Ph.D. | 1991 | Chemistry |

Positions and Employment

1991-1994- Research Fellow, School of Pharmacy, University of North Carolina, Chapel Hill, NC
 1994-1996 Research Associate, School of Pharmacy, University of North Carolina, Chapel Hill, NC
 1996-2001 Scientist, Therapeutic Drug Delivery, BD Technologies, RTP, NC
 2001-present Sr. Scientist, Manager, Therapeutic Drug Delivery, BD Technologies, RTP, NC

Honors and Professional Memberships

1990-present Member, American Association of Pharmaceutical Sciences
 2003-present Member, Controlled Release Society
 2000-present Member, BD Technologies Institutional Animal Care and Use Committee
 2001 Wesley J. Howe Award for Technology Innovation, corporate achievement award

Issued Patents

1. United States Patent 6,440,096 August 27, 2002, Microdevice and method of manufacturing a microdevice, AG Lastovich; JD Evans; **RJ Pettis**
2. United States Patent 6,595,947 July 22, 2003, Topical delivery of vaccines; JA Mikszta; JM Brittingham; J Alarcon; **RJ Pettis**; JP Dekker III
3. United States Patent 6,607,513 August 19, 2003, Device for withdrawing or administering a substance and method of manufacturing a device; J. Down; NG Harvey; FE Martin; **RJ Pettis**, AG Lastovich
4. United States Patent 6,656,147 December 2, 2003 Method and delivery device for the transdermal administration of a substance; M Gertsek; BM Wilkinson; **RJ Pettis**
5. United States Patent 6,689,100 February 10, 2004 Microdevice and method of delivering or withdrawing a substance through the skin of an animal; RI Connelly, **RJ Pettis**
6. United States Patent 6,722,364 April 20, 2004 Medicament inhalation delivery devices and methods for using the same; RI Robert; VJ Sullivan; CD Shermer; A Bhuta; **RJ Pettis**
7. United States Patent 6,808,506. October 26, 2004, Device and method for delivering or withdrawing a substance through the skin, AG Lastovich; JK Fentress; J Griggs; **RJ Pettis**; D Sutter; FE Martin; MI Haider
8. United States Patent 6,858,018 February 22, 2005, Iontophoretic devices, PG Green; **RJ Pettis**; MR Brosnan-Cook
9. United States Patent 7,040,316 May 9, 2006, Medicament inhalation delivery devices and methods for using the same; RI Connelly; VJ Sullivan; CD Shermer; A Bhuta; **RJ Pettis**
10. United States Patent 7,060,059 June 13, 2006, System and method for initiating and maintaining continuous, long-term control of a concentration of a substance in a patient using a feedback or model-

based controller coupled to a single-needle or multi-needle intradermal (ID) delivery device, S Keith; RS Parker; NG Harvey; **RJ Pettis**, JD DeNuzzio; G Vonk

11. United States Patent United States Patent 7,083,592, August 1, 2006, Device and method for delivering or withdrawing a substance through skin, AG Lastovich, JK Fentress, J Griggs, **RJ Pettis**, D Sutter, FE Martin, MI Haider,
12. 36 patents pending

Publications

1. **Pettis RJ**, Erickson BW, Forward RB, Rittschof D. Superpotent synthetic tripeptide mimics of the mud-crab pumping pheromone. *Int J Pept Protein Res.* 1993 Oct;42(4):312-9.
2. **Pettis RJ**, Hall I, Costa D, Hickey AJ. Aerosol delivery of muramyl dipeptide to rodent lungs. *AAPS PharmSci.* 2000;2(3):article 25
3. Mikszta JA, Alarcon JB, Brittingham JM, Sutter DE, **Pettis RJ**, Harvey NG. Improved genetic immunization via micromechanical disruption of skin-barrier function and targeted epidermal delivery. *Nat Med.* 2002 Apr;8(4):415-9.
4. **Pettis RJ**, Knowles MR, Olivier KN, Kazantseva M, Hickey AJ. Ionic interaction of amiloride and uridine 5'-triphosphate in nebulizer solutions. *J Pharm. Sci.* 2004 Sep;93(9):2399-406.
5. **Pettis RJ**. Microneedle based drug delivery: a promising minimally invasive method for parenteral administration, Drug Delivery Companies Report, Spring/Summer 2004
6. Mikszta J, Haider MI, **Pettis RJ**. Microneedles for Drug and Vaccine Delivery in Skin delivery systems : transdermals, dermatologicals, and cosmetic actives, 1st ed; JJ. Wille ed., 2006
7. Laurent PE, **Pettis RJ**, Easterbrook W, Berube J, Evaluating New Hypodermic and Intradermal injection Devices, *Med. Dev. Technology* Mar; 17 (2), 2006

Abstracts

1. **Pettis, RJ**, Middleton, BA, Cho, MJ (1994) Preformulation studies of UCN-01: Solubility and stability enhancement by polyvinylpyrrolidone binding, *Pharm. Res.*, 11:S230.
2. **Pettis, RJ**, Becton, BA, Cho, MJ, Tabibi, E (1995) Preformulation studies of sarcosine-chloroethylnitrosourea (SarCNU), *Proc. Am. Assoc. Canc. Res.*, 36:311.
3. Atkins, KM, Lator, CL, Concessio, NM, **Pettis, RJ**, Hickey, AJ (1995) Aerodynamic size characterization, lung deposition and alveolar macrophage uptake of microparticulate suspension aerosols in guinea pigs, abstract, 17th Annual Undergraduate Research Seminar, West Virginia University.
4. Lator, CJ, Atkins, KM, Concessio, NM, **Pettis, RJ**, Hickey, AJ (1996) Lung deposition and alveolar macrophage uptake of microparticulates from suspension aerosols in guinea pigs, abstract, Society of Toxicology 35th Annual Meeting, Anaheim, CA.
5. **Pettis, RJ**, Hickey, AJ (1996) Alveolar macrophage activation by muramyl dipeptide aerosols in guinea pigs: Effects on cellular morphology, poster, AAPS Southeast Regional Meeting, Research Triangle Park, NC.
6. **Pettis, RJ**, Hickey, AJ (1996) Effect of muramyl dipeptide aerosols on guinea pig alveolar macrophages, *Pharm. Res.*, 13(9):S166.
7. **Pettis, RJ**, Knowles, MR, Olivier, KN, Hickey, AJ (1996) Ionic interaction of amiloride and uridine-5'-triphosphate (UTP) in solution, *Pharm. Res.*, 13(9):S179.
8. **Pettis, RJ**, Sutter, D, Dekker, J, Bock, R (2000) Microfabricated microneedles for disruption of skin barrier function, poster, 2000 AAPS Annual Meeting and Exposition.
9. Mikszta, J, Alarcon, J, Brittingham, JM, Dekker, JP, **Pettis, RJ**, Harvey, N G Microdevice-Based Topical Delivery of DNA and Subunit Vaccines. *AAPS PharmSci* Vol. 2, No. 2, Abstract 2307 (2000)
10. **Pettis, RJ**, Haider, I, Mikszta, J, Alarcon, J, Brittingham, JM, Davison, N, Solbrig, C, Zahn, J (2001) Hollow microneedle drug delivery systems: Biomechanical characterization and vaccine delivery, *AAPS PharmSci*, Vol. 3, No. 3

11. **Pettis, RJ**, Harvey, N, Sutter, D, McFarland, A, Pollack, G, Leipmann, D, Zahn, J (2002) Intradermal insulin delivery via MEMS fabricated microneedles, poster, 2002 AAPS Annual Meeting and Exposition,
12. **Pettis, RJ**, Kaestner, S, Sutter, D (2003) Microneedle delivery of GCSF leads to unique pharmacokinetic advantages, poster, 2003 AAPS Annual Meeting and Exposition, Salt Lake City, UH
13. **Pettis, RJ**, Kaestner, S, Sutter, D, Fentress, J, Harvey, N (2003) Microneedle-Based Intradermal Delivery of Insulin to Diabetic Swine: A Novel Parenteral Administration Method with Unique PK/PD Outcomes, podium, 2003 CRS Annual Meeting, Honolulu, HA
14. **Pettis, RJ**, Kaestner, S, Sutter, D, Fentress, J, Harvey, N (2004) *Microneedle-Based Intradermal Delivery of Insulin Enables Unique PK/PD Outcomes*, 2004 AAPS Annual Meeting, Baltimore, MD
15. Jiang, G, **Pettis, RJ**, Kuo, S, Harvey, AJ, Eicher, K, Kaestner, SA, Mitchell, M, Hwang, R, Haider, MI, Sullivan, V Intradermal delivery of novel sildenafil formulations, 2004 AAPS Annual Meeting, Baltimore, MD
16. Harvey, AJ, Kaestner, SA, Sutter, DE, Fentress, JK, **Pettis, RJ** (2005) Microneedle based delivery of follicle stimulating hormone : comparative pharmacokinetics vs. standard IM Therapy, 2005 CRS Annual Meeting and Exposition, Miami, FL
17. **Pettis, RJ**, Nycz, C, Harvey AJ, Karl K, Dunn B, Ramadan, S, Foster P (2006) In Vivo Cellular MRI for Tracking the Growth and Fate of Melanoma Cells Transplanted into Lymph Nodes of Mice 2006 Society for Molecular Imaging Meeting, Kona, HI
18. Sharma R, Kwon S, Houston, JP, Ke, S, Sevic, EM, Nycz, CM, Sutter, DE, **Pettis, RJ** (2006) Dynamic Lymph Node Mapping Using an Optical Imaging Agent Administered with a Novel Delivery Device 2006 Society for Molecular Imaging Meeting, Kona, HI
19. Nycz, CM, Brittingham, J, Vonk, G, Mikszta, J, **Pettis, RJ** Sentinel Lymph Node Mapping Using Near IR Fluorescence Imaging and a Novel Lymph-Specific Delivery System 2006 Society for Molecular Imaging Meeting, Kona, HI

Current or Completed Research Support

None